

***FlyBy Math™* Alignment**
Kansas Curricular Standards for Mathematics
Jan 31, 2004

Standard 1: Number and Computation

Number and Computation – The student uses numerical and computational concepts and procedures in a variety of situations.

Benchmark 3: Estimation – The student uses computational estimation with rational numbers and the irrational number pi in a variety of situations.

Seventh Grade Application Indicators

The student...

***FlyBy Math™* Activities**

2. estimates to check whether or not the result of a real-world problem using rational numbers, the irrational number pi, and/or simple algebraic expressions is reasonable and makes predictions based on the information) (2.4.A1a)

--Predict outcomes and explain results of mathematical models and experiments.

3. determines a reasonable range for the estimation of a quantity given a real-world problem and explains the reasonableness of the range (2.4.A1a)

--Predict outcomes and explain results of mathematical models and experiments.

4. determines if a real-world problem calls for an exact or approximate answer and performs the appropriate computation using various computational methods including mental math, paper and pencil, concrete objects, or appropriate technology (2.4.A1a)

--Predict outcomes and explain results of mathematical models and experiments.

--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

Standard 2: Algebra

Algebra – The student uses algebraic concepts and procedures in a variety of situations.

Benchmark 1: Patterns – The student recognizes, describes, extends, develops, and explains the general rule of a pattern in a variety of situations.

Seventh Grade Knowledge Base Indicators

The student...

1. identifies, states, and continues a pattern presented in various formats including numeric (list or table), algebraic (symbolic notation), visual (picture, table, or graph), verbal (oral description), kinesthetic (action), and written using these attributes:
 d. measurements (2.4.K1a)
 e. things related to daily life

***FlyBy Math™* Activities**

--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

<p>Seventh Grade Application Indicators The student...</p> <p>2. recognizes the same general pattern presented in different representations [numeric (list or table), visual (picture, table, or graph), and written] (2.4.A1a,j)</p>	<p>FlyBy Math™ Activities</p> <p>--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p>
<p>Benchmark 2: Variables, Equations, and Inequalities – The student uses variables, symbols, rational numbers, and simple algebraic expressions in one variable to solve linear equations and inequalities in a variety of situations.</p>	
<p>Seventh Grade Knowledge Base Indicators The student...</p> <p>1. know and explains that a variable can represent a single quantity that changes (2.4.K1a)</p>	<p>FlyBy Math™ Activities</p> <p>--Represent distance, speed, and time relationships for constant speed cases using linear equations and a Cartesian coordinate system.</p>
<p>2. shows and explains how changes in one variable affect other variables (2.4.A1a)</p>	<p>--Represent distance, speed, and time relationships for constant speed cases using linear equations and a Cartesian coordinate system.</p> <p>--Interpret the slope of a line in the context of a distance-rate-time problem.</p>
<p>Benchmark 3: Functions – The student recognizes, describes, and analyzes constant and linear relationships in a variety of situations.</p>	
<p>Seventh Grade Knowledge Base Indicators The student...</p> <p>3. demonstrates mathematical relationships using ordered pairs in all four quadrants of a coordinate plane. (2.4.K1g)</p>	<p>FlyBy Math™ Activities</p> <p>--Represent distance, speed, and time relationships for constant speed cases using linear equations and a Cartesian coordinate system.</p> <p>--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.</p>
<p>Seventh Grade Application Indicators The student...</p> <p>1. represents a variety of constant and linear relationships using written and oral descriptions of the rule, tables, graphs, and when possible, symbolic notation (2.4.A13-g,k)</p>	<p>FlyBy Math™ Activities</p> <p>--Represent distance, speed, and time relationships for constant speed cases using linear equations and a Cartesian coordinate system.</p>
<p>2. interprets, describes, and analyzes the mathematical relationships of numerical, tabular, and graphical representations, including translations between the representations (2.4.A1k)</p>	<p>--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p>

Benchmark 4: Models – The student generates and uses mathematical models to represent and justify mathematical relationships in a variety of situations.

<p>Seventh Grade Knowledge Base Indicators The student...</p> <p>1. knows, explains, and uses mathematical models to represent mathematical concepts, procedures, and relationships. Mathematical models include:</p> <ul style="list-style-type: none"> a. process models (concrete objects, pictures, diagrams, number lines, hundred charts, measurement tools, multiplication arrays, division sets, or coordinate planes/grids) to model computational procedures and mathematical relationships and to solve equations; f. function tables (input/output machines, T-tables) to model numerical and algebraic relationships; g. coordinate planes to model relationships between ordered pairs and linear equations; j. frequency tables, bar graphs, line graphs, circle graphs, Venn diagrams, line plots, charts, tables, single stem-and-leaf plots, and scatter plots to organize and display data 	<p>FlyBy Math™ Activities</p> <p>--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p> <p>--Represent distance, speed, and time relationships for constant speed cases using linear equations and a Cartesian coordinate system.</p>
<p>Seventh Grade Application Indicators The student...</p> <p>1. recognizes that various mathematical models can be used to represent the same problem situation. Mathematical models include:</p> <ul style="list-style-type: none"> a. process models (concrete objects, pictures, diagrams, number lines, hundred charts, measurement tools, multiplication arrays, division sets, or coordinate planes/grids) to model computational procedures and mathematical relationships and to solve equations; f. function tables to model numerical and algebraic relationships; g. coordinate planes to model relationships between ordered pairs and linear equations; k. frequency tables, bar graphs, line graphs, circle graphs, Venn diagrams, charts, tables, single stem-and-leaf plots, scatter plots, and box-and-whisker plots to describe, interpret, and analyze data 	<p>FlyBy Math™ Activities</p> <p>--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p>
<p>2. selects a mathematical model and justifies why some mathematical models are more useful than other mathematical models in certain situations</p>	<p>--Choose among tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p> <p>--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a</p>

	schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.
3. uses the mathematical modeling process to make inferences about real-world situations when the mathematical model used to represent the situation is given.	--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

Standard 3: Geometry

Geometry – The student uses geometric concepts and procedures in a variety of situations.

Benchmark 2: Measurement and Estimation – The student estimates, measures, and uses measurement formulas in a variety of situations.

<i>Seventh Grade Knowledge Base Indicators</i> The student...	<i>FlyBy Math™ Activities</i>
1. determines and uses rational number approximations (estimations) for length, width, weight, volume, temperature, time, perimeter, and area using standard and nonstandard units of measure (2.4.K1a)	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.
2. selects and uses measurement tools, units of measure, and level of precision appropriate for a given situation to find accurate rational number representations for length, weight, volume, temperature, time, perimeter, area and angle measurements. (2.4.K1a)	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.
8. uses appropriate units to describe rate as a unit of measure(2.4.K1a)	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios. --Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.
<i>Seventh Grade Application Indicators</i> The student...	<i>FlyBy Math™ Activities</i>
1. solves real-world problems by: d. using appropriate units to describe rate as a unit of measure (2.4.A1a) f. applying various measurement techniques (selecting and using measurement tools, units of measure, and level of precision) to find accurate rational number representations for length, weight, volume, temperature, time, perimeter, and area appropriate to a given situation (2.4.A1a)	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios. --Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.

2. estimates to check whether or not measurements or calculations for length, width, weight, volume, temperature, time, perimeter, and area in real-world problems are reasonable and adjusts original measurement or estimation based on additional information (a frame of reference) (2.4.A1a)	<p>--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.</p> <p>--Predict outcomes and explain results of mathematical models and experiments.</p>
Benchmark 4: Geometry From An Algebraic Perspective – The student relates geometric concepts to a number line a coordinate plane in a variety of situations.	
Seventh Grade Knowledge Base Indicators	FlyBy Math™ Activities
The student...	
3. uses a given linear equation with whole number coefficients and constants and a whole number solution to find the ordered pairs, organizes the ordered pairs using a T-table, and plots the ordered pairs on the coordinate plane(2.4.K1e-g):	<p>--Represent distance, speed, and time relationships for constant speed cases using linear equations and a Cartesian coordinate system.</p> <p>--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.</p>

Standard 4: Data

Data – The student uses concepts and procedures of data analysis in a variety of situations.

Benchmark 2: Statistics – The student collects, organizes, displays, and explains numerical (rational numbers) and non-numerical data sets in a variety of situations with a special emphasis on measures of central tendency.

Seventh Grade Knowledge Base Indicators	FlyBy Math™ Activities
The student...	
1. organizes, displays, and reads numerical (quantitative) and non-numerical (qualitative) data in a clear, organized, and accurate manner including a title, labels, categories, and whole number and decimal intervals using these data displays (2.4.K1j):: b. bar, line, and circle graphs, d. charts and tables	--Represent distance, rate, and time data using tables, line plots, bar graphs, and line graphs.
Seventh Grade Application Indicators	FlyBy Math™ Activities
The student...	
2. explains advantages and disadvantages of various data displays for a given data set (2.4.A1k)::	--Choose among tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.